

## CLAIMS

We claim:

1. A torque converter assembly, comprising:  
a clutch portion;  
an end cover at a first axial end of the assembly that does not extend beyond a plane of the clutch;  
a turbine portion on an opposite side of the clutch from the end cover;  
and  
an impeller portion having an outer wall that begins near a second axial end of the assembly and extends beyond the plane of the clutch, an end portion of the outer wall being secured to the end cover.
2. The assembly of claim 1, wherein an end of the impeller portion outer wall is secured to an end of the end cover.
3. The assembly of claim 1, wherein the impeller outer wall is welded to the end cover.
4. The assembly of claim 1, wherein the end portion of the outer wall includes an extension that is at least partially deformed and positioned against a corresponding portion of the end cover such that some of the end cover is received between the extension and an adjacent portion of the outer wall.

5. The assembly of claim 4, wherein at least some of the deformed extension is welded to the end cover.

6. The assembly of claim 1, wherein the end cover periphery is at least partially threaded and the outer wall end portion includes corresponding threads that cooperate with the threaded periphery to secure the outer wall to the end cover.

7. The assembly of claim 6, wherein at least one of the end cover periphery or the outer wall end portion has an extension that abuts a corresponding surface on the other of the outer wall or the end cover to seal the assembly.

8. The assembly of claim 7, wherein the threads are timed so that the threaded connection between the outer wall and the end cover bottoms out simultaneously with the extension abutting the corresponding surface.

9. The assembly of claim 1, wherein the end cover includes a gear surface on an outer periphery of the end cover and wherein the outer wall end portion is secured to the end cover radially inward of the gear surface.

10. The assembly of claim 1, wherein the end cover includes a radially extending portion near an outward edge of the end cover, the radially extending portion extending beyond an outside dimension of the impeller portion outer wall and providing a surface for securing another driveline component to the end cover.

11. The assembly of claim 10, wherein the end portion includes a plurality of threaded connecting members integrally formed as part of the end cover.

12. The assembly of claim 1, wherein the end cover includes a strengthening ring that is received at least partially within the impeller portion adjacent the outer wall end portion.

13. The assembly of claim 1, wherein the impeller portion outer wall comprises a plurality of splines near the end portion.

14. A torque converter housing, comprising:  
a generally plate-like end cover having an outward portion that extends in a radial direction but not in an axial direction; and  
an impeller outer wall having a portion that extends axially toward the end cover outward portion and is secured to the outward portion.

15. The housing of claim 14, wherein the outer wall portion is welded to the end cover.

16. The housing of claim 14, wherein the outer wall portion includes an extension that is at least partially deformed and positioned against a corresponding surface of the outward portion of the end cover such that some of the end cover is received between the extension and the outer wall portion.

17. The housing of claim 16, wherein at least some of the deformed extension is welded to the end cover.

18. The housing of claim 14, wherein the end cover outward portion is at least partially threaded and the outer wall portion includes corresponding threads that secure the outer wall to the end cover.

19. The housing of claim 18, wherein at least one of the end cover outward portion or the outer wall portion has an extension that abuts a corresponding surface on the other of the outer wall or the end cover to seal the assembly.

20. The housing of claim 19, wherein the threads are timed so that the threaded connection between the outer wall and the end cover bottoms out simultaneously with the extension abutting the corresponding surface.

21. The housing of claim 14, wherein the end cover includes a gear surface on an outer periphery of the end cover and wherein the outer wall portion is secured to the end cover outward portion radially inward of the gear surface.

22. The housing of claim 14, wherein the end cover has a radially extending flange that extends beyond an outside dimension of the impeller outer wall and provides a surface for connecting another driveline component to the end cover.

23. The housing of claim 22, including a plurality of connecting members integrally formed as part of the end cover.

24. The housing of claim 14, including a separate pilot member that is welded to the end cover.

25. The assembly of claim 14, wherein the end cover includes a strengthening ring that is received at least partially within the impeller portion adjacent the outer wall end portion.

26. The assembly of claim 14, wherein the impeller portion outer wall comprises a plurality of splines near the end portion.

27. A torque converter assembly, comprising:
- an end cover including a threaded portion; and
  - an impeller outer wall including a threaded portion that cooperates with the threaded portion of the end cover to secure the outer wall to the end cover.
28. The assembly of claim 27, wherein at least one of the end cover or the outer wall has an extension that abuts a corresponding surface on the other of the outer wall or the end cover to seal the assembly.
29. The assembly of claim 28, wherein the threads are timed so that the threaded connection between the outer wall and the end cover bottoms out simultaneously with the extension abutting the corresponding surface.

30. A torque converter assembly, comprising:
- an impeller outer wall including a plurality of splines on at least an inside surface of the outer wall.